

CLAIMS

1. A method of controlling communications in a shared protection
architecture, where first and second network elements support communications
over a plurality of working channels of respective rings using a shared protection
channel common to all of said rings, comprising the steps of:

responsive to an indicated span switch on a first ring, passing control
information for said first ring over said shared protection channel while
indicating availability of the shared protection channel to rings other than said
first ring; and

responsive to an indication that the shared protection channel is needed to
pass communications traffic for a second ring, ceasing to pass the control
information for said first ring over said shared protection channel and indicating
the non-availability of the shared protection channel to rings other than said
second ring.

2. The method of claim 1, and further comprising the step of
indicating a lockout of protection (LOP) for any ring indicating a span switch
while the span switch exist on said first ring and prior to said indication that the
shared protection channel is needed to pass communications.

3. The method of claim 1 wherein said step of indication the non-
availability of the shared protection ring comprises the step of generating a
lockout of protection (LOP) on protection channels for any ring other than said
second ring while said shared protection span is need to pass communications
for said second ring.

4. The method of claim 1 wherein said step of ceasing to pass control
information is responsive to an indicated ring switch on said second ring.

5. The method of claim 4 wherein said step of ceasing to pass control
information is responsive to span switch on said second ring formed between
said first and second network elements.

6. The method of claim 4 and further comprising the step of
generating a span switch signal on non-shared protection channels associated
with said second ring.

7. A communications network using a shared protection architecture
over a plurality of communication rings, each ring comprising one or more
working channels for passing communications traffic, comprising:

first and second shared protection network elements supporting
communications traffic over a working channels for a predetermined set of said
rings using a shared protection channel, said first and second shared protection
network elements including control circuitry for:

passing control information for a first ring over said shared
protection channel while indicating availability of the shared protection channel
to rings other than said first ring, responsive to an indicated span switch on a
first ring; and

ceasing to pass the control information for said first ring over said
shared protection channel, responsive to an indication that the shared protection
channel is needed to pass communications traffic for a second ring; and

circuitry for indicating the non-availability of the shared protection
channel to rings other than said second ring, responsive to an indication that the
shared protection channel is needed to pass communications traffic for a second
ring.

8. The communications network of claim 7, wherein said control
circuitry further comprising circuitry for indicating a lockout of protection (LOP)
for any ring indicating a span switch while the span switch exist on said first ring

4 and prior to said indication that the shared protection channel is needed to pass
communications.

9. The communications network of claim 7 wherein said circuitry for
2 indicating the non-availability of the shared protection ring comprises circuitry
for generating a lockout of protection (LOP) on protection channels for any ring
4 other than said second ring while said shared protection span is need to pass
communications for said second ring.

10. The communications network of claim 7 wherein said circuitry for
2 ceasing to pass control information is responsive to an indicated ring switch on
said second ring.

11. The communications network of claim 10 wherein said circuitry for
2 ceasing to pass control information is responsive to a span switch on said second
ring formed between said first and second network elements.

12. The communications network of claim 11 wherein said control
2 circuitry further comprises circuitry for generating a span switch signal on non-
shared protection channels associated with said second ring.

13. A shared protection network element for use in a communications
2 network using a shared protection architecture wherein communications traffic
is passed over a plurality of communication rings, each ring comprising one or
4 more working channels for passing communications traffic, and where a shared
protection channel is used by the network element to protect a set of said
6 working channels, comprising:

circuitry for passing control information for a first ring over said
8 shared protection channel while indicating availability of the shared protection
channel to rings other than said first ring, responsive to an indicated span switch
10 on a first ring;

12 circuitry for ceasing to pass the control information for said first
ring over said shared protection channel, responsive to an indication that the
shared protection channel is needed to pass communications traffic for a second
14 ring; and
circuitry for indicating the non-availability of the shared protection
16 channel to rings other than said second ring, responsive to an indication that the
shared protection channel is needed to pass communications traffic for a second
18 ring.

14. The communications network of claim 13 and further comprising
2 circuitry for indicating a lockout of protection (LOP) for any ring indicating a
span switch while the span switch exists on said first ring and prior to said
4 indication that the shared protection channel is needed to pass communications.

15. The communications network of claim 13 wherein said circuitry for
2 indicating the non-availability of the shared protection ring comprises circuitry
for generating a lockout of protection (LOP) on protection channels for any ring
4 other than said second ring while said shared protection span is need to pass
communications for said second ring.

16. The communications network of claim 13 wherein said circuitry for
2 ceasing to pass control information is responsive to an indicated ring switch on
said second ring.

17. The communications network of claim 16 wherein said circuitry for
2 ceasing to pass control information is responsive to a span switch on said second
ring formed between said first and second network elements.

18. The communications network of claim 17 and further comprising
2 circuitry for generating a span switch signal on non-shared protection channels
associated with said second ring.